REMARKS

Claims 1-32 are pending. Applicant has amended claims 1, 9, and 18.

The Examiner has rejected claims 1-32 under 35 U.S.C. § 103(a) as being unpatentable based on the following combinations of references.

Claims	References
1-3, 6-7, 9-13, 16, 18-21, 25, 28, and 31-32	Brunner, Kato and Riconda
4-5, 14-15, and 23-24	Brunner, Kato, Riconda, and EO Target Geolocation Determination
8, 17, and 26-27	Brunner, Kato, Riconda, and Williams
22	Brunner, Kato, Riconda, and Antikidis
29-30	Brunner, Kato, Riconda, and Koyanagi

Even though applicant respectfully disagrees with the basis of these rejections, applicant has amended independent claims 1, 9, and 18 to further clarify the claimed invention. The combined teachings of Brunner, Kato, and Riconda cannot support a *prima facie* case of obviousness of the pending claims because (1) the combined teachings fail to teach or suggest every feature of the claims, and (2) there is no motivation or suggestion to combine the reference teachings.

Applicant's technique tracks a target using a device (e.g., a camera) mounted to a moving vehicle in a manner that combines both static and dynamic adjustments to the orientation of the device. A static adjustment is one that is based on the current position of the vehicle and the current position of the target. A dynamic adjustment is one that is based on the behavior of the vehicle, such as the vehicle's velocity. The static adjustment is both discrete and reactive. It is discrete in that a given set of input values for the position of the vehicle and target will produce a given set of output values for orienting the device. The static adjustment is reactive, in that it reacts to the current position of the vehicle and target, and becomes stale unless it is periodically updated as the positions of the vehicle and target change. The dynamic adjustment, on the other hand, is continuous and proactive. It is continuous in that if the device is set in motion at a given angular velocity, then the device's orientation is constantly changing. The dynamic adjustment is

proactive, in that it attempts to anticipate new positions of the vehicle and target to maintain the line of sight of the device between the vehicle and target. When combined, the dynamic adjustment provides smooth and continuous adjustment based on velocity, and the static adjustment corrects for accumulated error. *See, e.g., Application [0014].*

Brunner describes a tracking system based only on the current position of an aircraft and the current position of a target. A user inputs the latitude, longitude, and altitude of a target using a user interface. Brunner, col. 4:4-5 and 4:48-52. The system receives the aircraft position in the form of latitude, longitude, altitude, pitch, roll, heading, and time. Brunner, col. 39-40. Based on the position of the target and the position of the aircraft, Brunner uses simple trigonometry to calculate a current orientation for the camera. The system of Brunner does not describe dynamic adjustments. Brunner is limited to static adjustments based on receiving a current position for the aircraft and target from which the system calculates a new discrete value for the camera orientation. The system of Brunner is always reacting to the new position of the aircraft and does not describe any dynamic, proactive adjustment based on the velocity of the aircraft.

Kato describes a system for reconstructing the three-dimensional shape of an object without rotating the object. Kato places a camera at a fixed position and rotates the camera in a single dimension to track an object passing by (e.g., a car driving down a road). Kato detects the position of the object within the image captured by the camera, and if the object is not centered Kato rotates the camera to center the object. Kato, col. 8:61-67. Like Brunner, Kato describes a static, reactive adjustment based on the position of the vehicle within the camera image. Kato does not receive or calculate the velocity of the vehicle or make a dynamic adjustment based on the velocity of the vehicle.

Riconda describes a camera and heads-up display (HUD) for a car that focuses a driver's attention on passing street signs and other important objects by placing images of the objects in front of the driver. Like Brunner and Kato, Riconda describes a static, reactive adjustment based on the position of the vehicle and the position of the object:

"[t]hus, the change in position in physical space is computed (1813); and, using straightforward trigonometric techniques, this is converted to the angular offsets to the rotational transducers on the robotic camera mount that are needed to affect the compensatory adjustments that will keep the item of interest roughly centered in the camera's field of view (1814)." Riconda, [0136]. Riconda does not make a dynamic adjustment based on the velocity of the vehicle.

Each of applicant's claims recites a dynamic adjustment based on the velocity of the vehicle, and a maintaining the line of sight of the camera based on a combined static and dynamic adjustment. For example, claim 1 recites, "determining a dynamic adjustment including setting an angular velocity for moving the line of sight of the camera, the angular velocity being calculated based on the velocity of the vehicle," and "maintaining the line of sight of the camera by combining the determined dynamic and static adjustments." The combined teachings of Brunner, Kato, and Riconda fail to teach or suggest these elements of claims 1-32 because all three references disclose control mechanisms based purely static adjustments as described above.

In addition, the Examiner's stated motivation for combining these references is based entirely on hindsight reasoning. Brunner and Kato have substantial differences. For example, while Brunner describes tracking a stationary target from a camera mounted to a moving aircraft, the camera in Kato is mounted to a fixed location. As another example, Brunner operates a camera in three dimensions whereas the camera in Kato rotates side to side in one dimension. It is unclear to applicant how these two divergent techniques can be combined. Yet, the Examiner states that the "motivation for doing this would have been to add the ability to track objects with unknown positions as taught by Kato, when the current position of the aircraft is not known." Office Action, October 18, 2006, p. 3. Applicant is perplexed by the meaning of this statement. Brunner receives a position in latitude and longitude of the aircraft and target, and Kato describes a camera at a fixed location and a target whose position is determined. Neither Brunner nor Kato describe the position of the camera or target being unknown. Even if one or more of these positions

were unknown, it is unclear to applicant how that would motivate one of ordinary skill in the art at the time of applicant's invention to combine these two references in any meaningful way, much less to produce the type of dynamic adjustment recited by applicant's claims..

The motivation for combining Brunner with Riconda is similarly absent. Brunner describes a camera mounted to an aircraft that moves in three dimensions, whereas Riconda describes a car that moves in only two dimensions. The techniques involved in performing targeting calculations to produce even a static adjustment in two and three dimensions differ substantially, much less to produce the type of dynamic adjustment recited by applicant's claims. Yet, the Examiner states that the "motivation would have been that tracking a stationary [object] with a moving camera is the equivalent to tracking a moving object with a stationary camera." Office Action, October 18, 2006, p. 4. Again, applicant is perplexed by the meaning of this statement. Both Brunner and Riconda describe techniques for tracking stationary objects (e.g., landmarks and street signs) from a camera attached to a moving vehicle (e.g., an aircraft or a car). However, even if the Examiner's statement is assumed to be true, it is unclear to applicant how that would motivate one of ordinary skill in the art at the time of applicant's invention to combine these two references in any meaningful way, much less to produce the type of dynamic adjustment recited by applicant's claims..

Based upon these remarks, applicant respectfully requests reconsideration of this application and its early allowance. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 359-3265. Applicant believes all required fees are being paid in connection with this response. However, if an additional fee is due, please charge our Deposit Account No. 50-0665, under Order No. 367618014US1 from which the undersigned is authorized to draw.

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Respectfully submitted,

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